

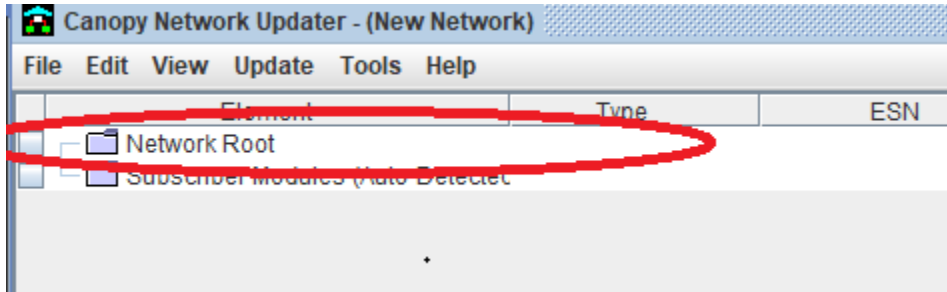
450 B and Retro

NOTE: Set your IP to 169.254.1.100 subnet 255.255.255.0 to access local radios

-Updating Firmware

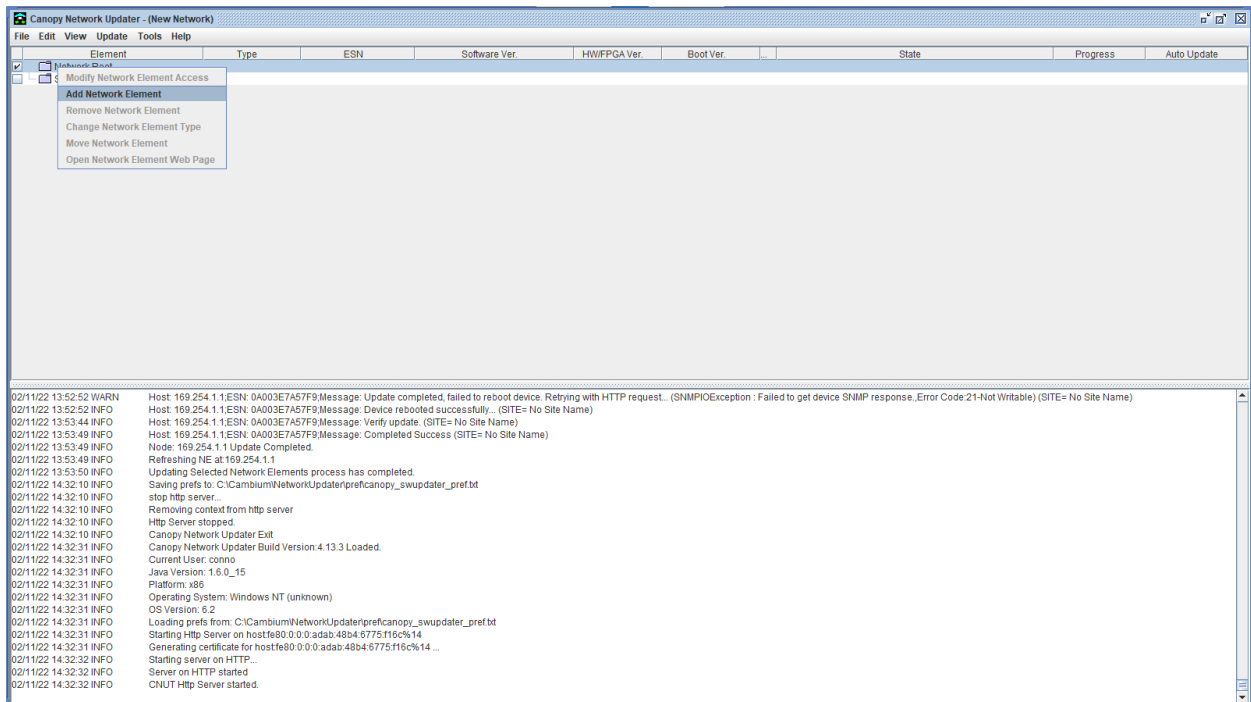
****For on site updates we use CNut (Cambium Network Updater)****

-We will want to first power on the device with the correct POE and plug a laptop in
-open CNut and locate the box shown below



-check the box labeled Network Root

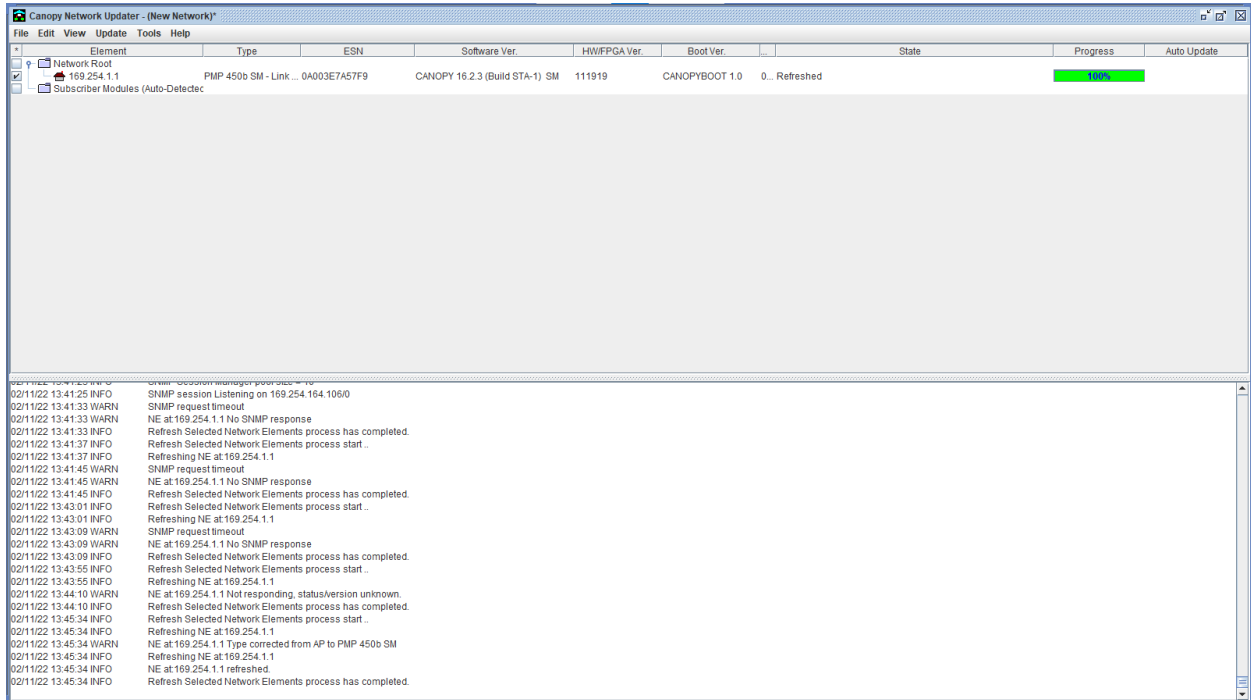
-after checking the box right click network root, and select add network element



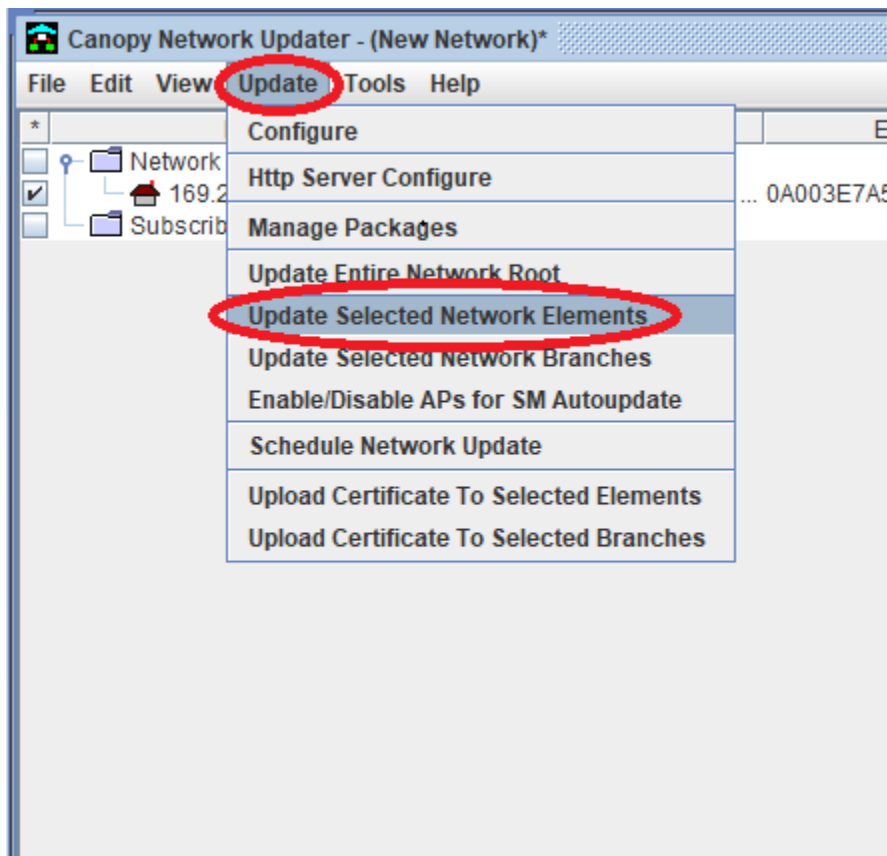
- enter in the default IP for the radio into the box highlighted red
 - **default IP for cambium radios is 169.254.1.1**
- after entered hit ok

The screenshot shows a dialog box titled "Add Network Element To Network Root". The "Element Type" is set to "Network Element". Under "Network Settings", the "Use Default/Inherit Settings from Parent Element" checkbox is checked. The "User Account" section has "Device Login ID" set to "root". The "SNMP Settings" section has "SNMP Community" set to "Canopy", "SNMP Version" set to "v2c", "SecurityLevel" set to "NOAUTH_NOPRIV", "Auth Protocol" set to "MD5", "Auth Password" and "Privacy Password" fields are masked with dots, "Context Name" is empty, and "SNMP Port" is set to "161". The "HTTP Settings" section has "HTTP" selected with a port of "80" and "HTTPS" with a port of "443". In the "Discovery Targets" section, the "Element Host Name(s)/IP Address(s)" radio button is selected. A text input field in this section contains "169.254.1.1" and is highlighted with a red border. The "Description" field is empty. "Ok" and "Cancel" buttons are at the bottom.

- deselect the network root box and select the new box next to the default IP.
- left click the “view” button along the top bar, and a box of options will appear
- click the item labeled “Refresh/Discover Selected Network Elements”
- If added correctly your screen will look like the below image



- Next click the “update” button on the top bar
- click the button labeled “Update Selected Network Elements”



-A progress bar will pop up, wait for the update to complete before unplugging the radio.

-after the update has finished you will be able to see what software it is running

File	Edit	View	Update	Tools	Help
*	Element	Type	ESN	Software Ver.	HW
<input type="checkbox"/>	Network Root				
<input checked="" type="checkbox"/>	169.254.1.1	PMP 450b SM - Link ...	0A003E7A57F9	CANOPY 16.2.3 (Build STA-1) SM	1119
<input type="checkbox"/>	Subscriber Modules (Auto-Detected)				

-Applying the configuration

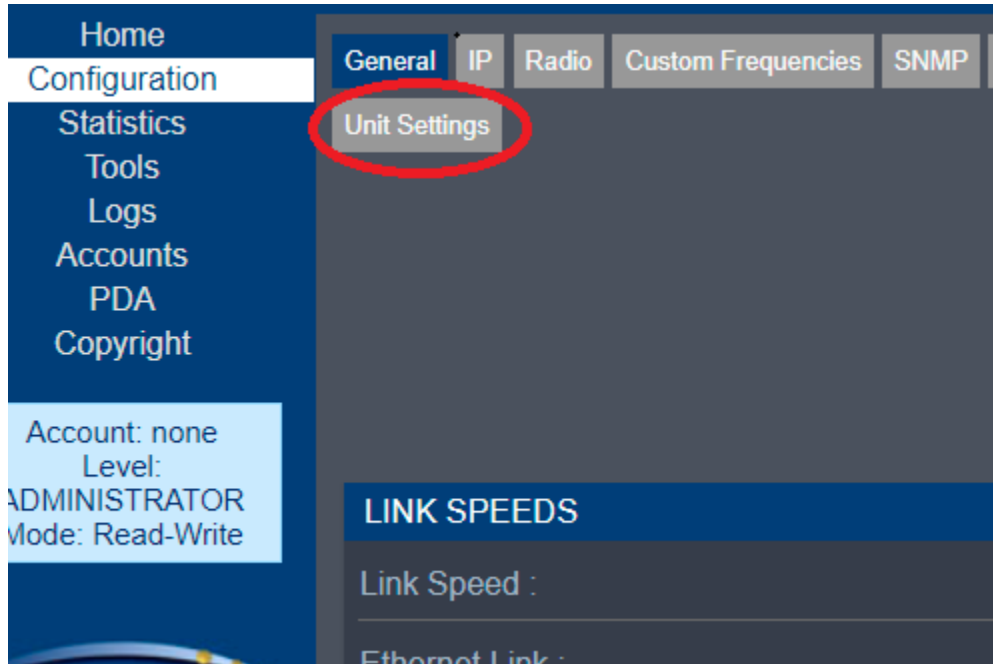
-open a web browser and navigate to the default IP, you will be on a screen that is shown below

[http://169.254.1.1**](http://169.254.1.1)**

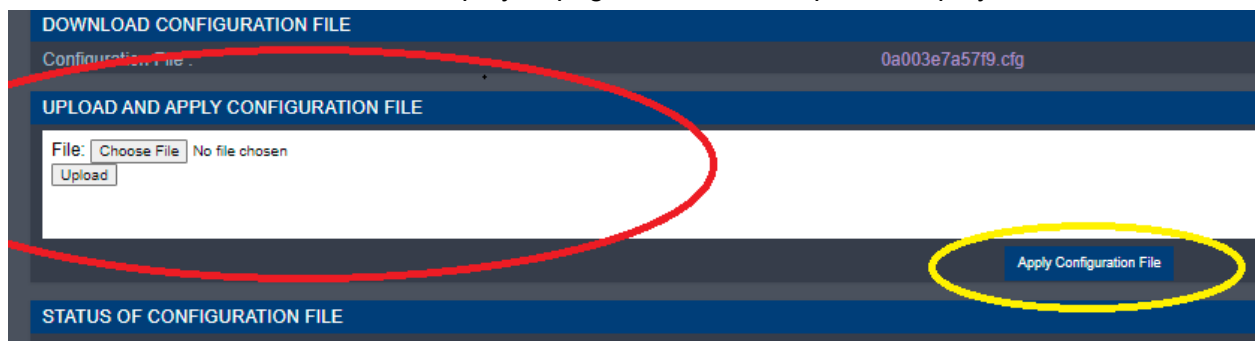
-click on "Configuration" on the left hand side of the screen

The screenshot displays the Cambium Networks web interface. The left-hand navigation menu is visible, with the 'Configuration' option highlighted and circled in red. The main content area shows a 'General Status' tab selected, with sub-sections for 'Event Log' and 'Network Interface'. Below this, there is a 'SITE INFORMATION' section with fields for 'Site Name', 'Site Contact', and 'Site Location'. At the bottom, a 'DEVICE INFORMATION' section is partially visible. A user information box in the bottom left corner shows 'Account: none', 'Level: ADMINISTRATOR', and 'Mode: Read-Write'.

-click the "Unit Settings" button on the top bar



Scroll down to the bottom of the displayed page to see these options displayed below



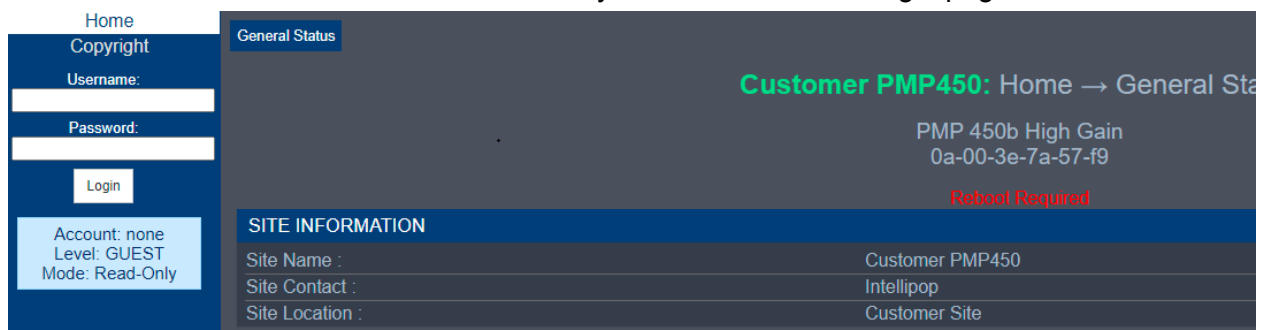
-select the button "Choose File" in the red circle above

-file explorer will pop up, select the config you would like to use then click upload

-after uploading the config, go to the yellow circle and hit "Apply Configuration File"

-after hitting "Apply Configuration File" it will direct you to a page saying "Can't find file. Please press here to continue"

-click the button "Here" and it will take you back to the main login page



-login to the radio with the following credentials and reboot it.

Username: admin

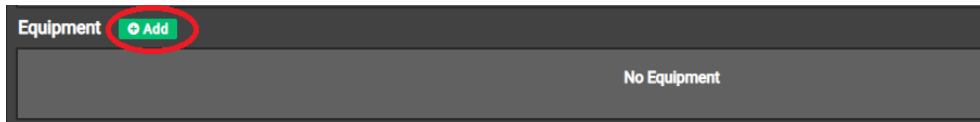
Password: E1xRM9IXG2okqL

-This radio is now ready for field use.

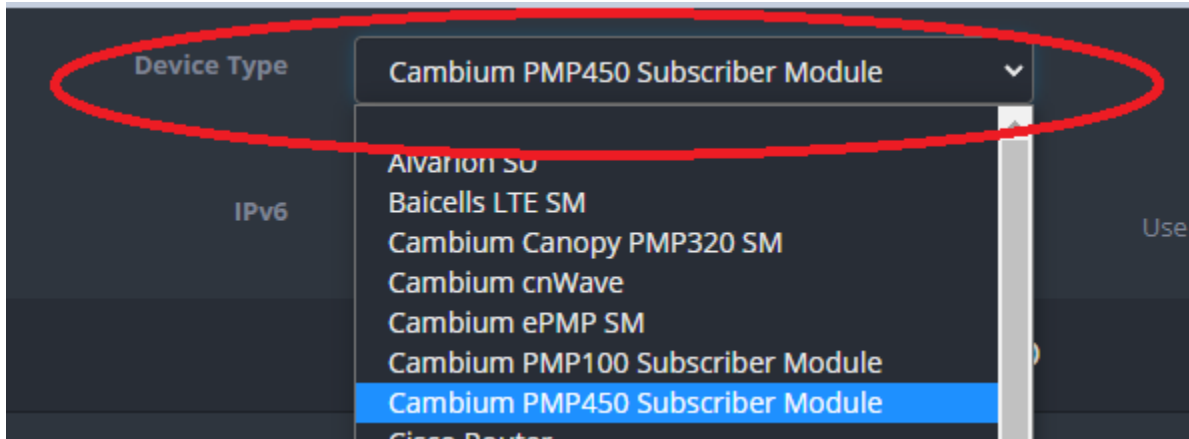
-Adding to Powercode Desktop instructions

We are using PSA as an example here

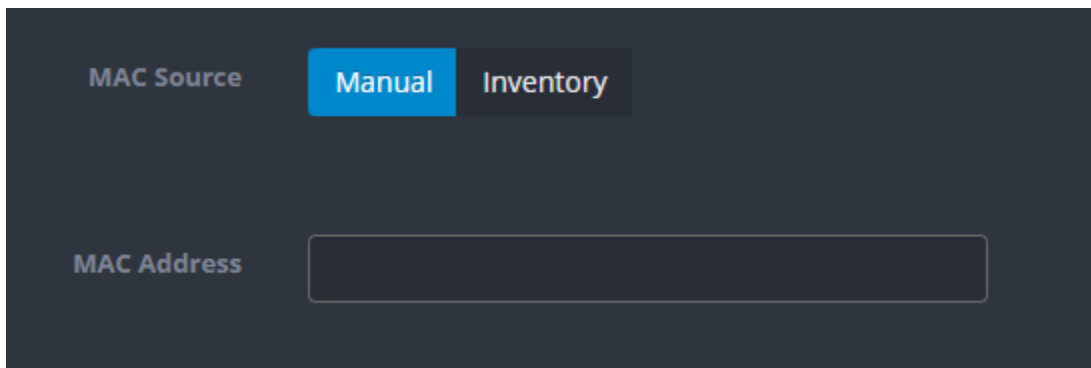
- Open the customer Overview page and click the green button labeled “Add” in the equipment section.



-set the device type as “Cambium PMP450 Subscriber Module”

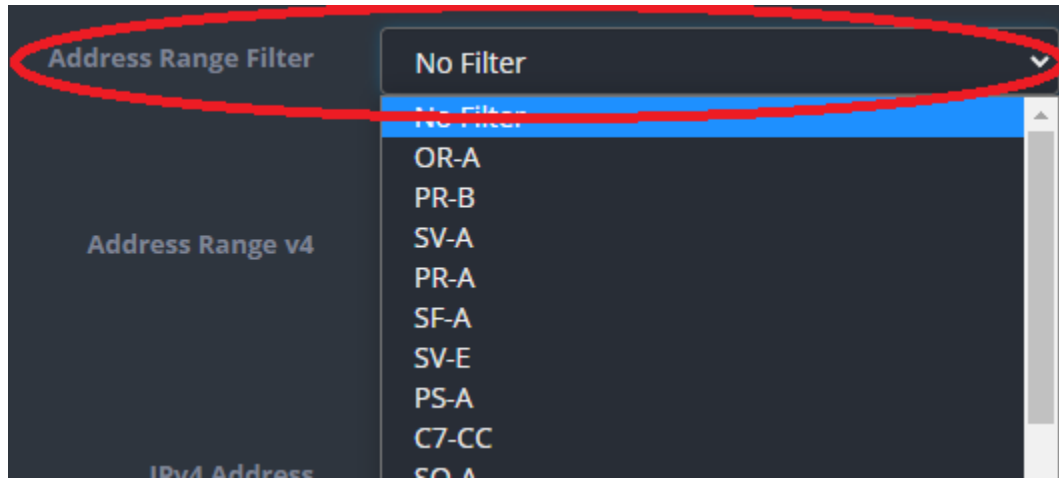


- Enter the mac address for the radio you will be using into the box labeled MAC address (the mac can be found on the radio on the side, or on the box it comes in.) It might be in the job notes.



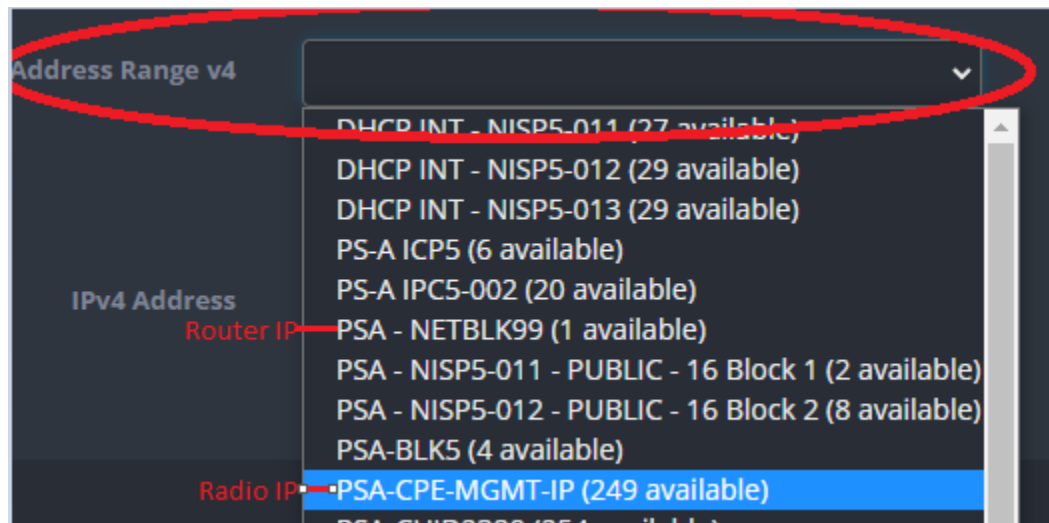
-Next we need to set the tower we are connecting to by clicking the dropdown arrow in the box labeled "Address Range Filter"

(set this as the tower you will be connecting to.)

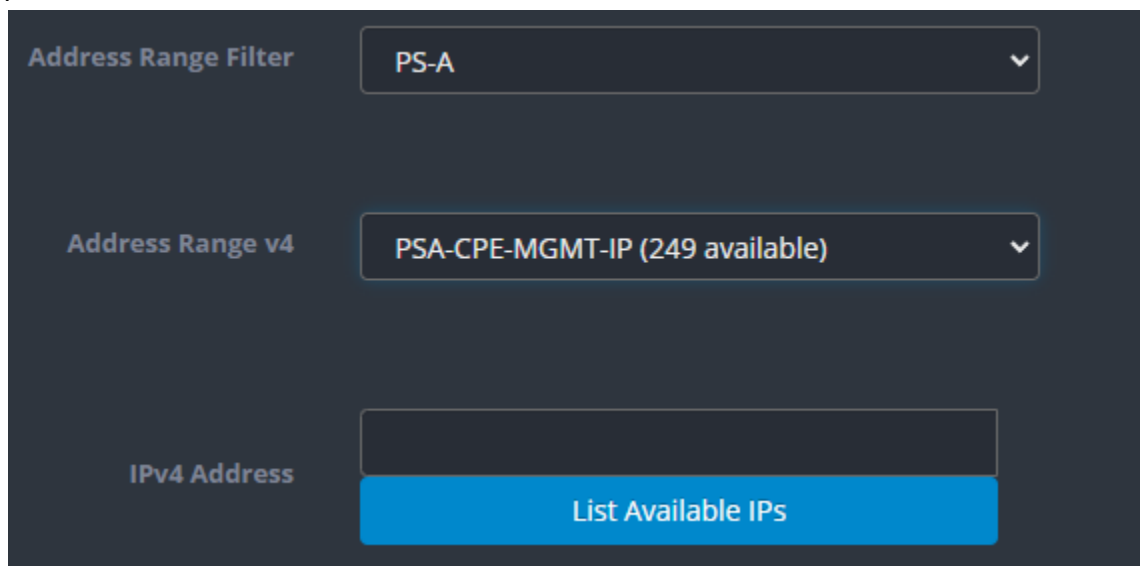


-we will set the IP Address Range by using the dropdown arrow in the box "Address Range v4"
Select the IP for the appropriate tower and IP type

(Netblock= Public IP for the router, CPE-MGMT-IP= Private IP for the radio)



Below is a picture of what it will look like after the above information is entered to add a Radio to powercode



-After all the above has been done scroll to the bottom and hit the green save button and this piece of equipment will be added to powercode for installation
(Be sure you are not using a MAC or IP that is on another piece of equipment or account, this will cause a lot of issues quickly.)

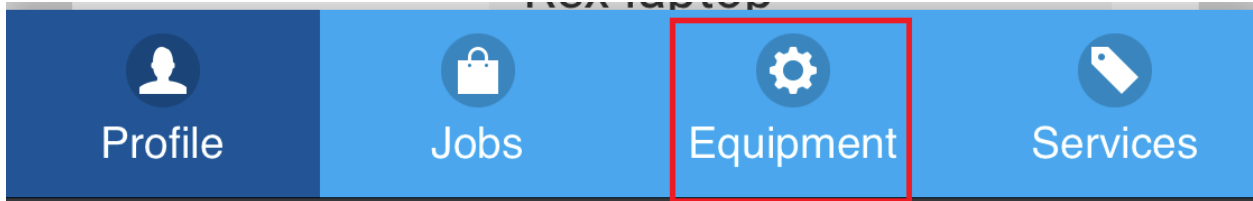
This is how it will appear in powercode after being added if the radio is online

Equipment	+	Add			
Donald McKenna - 328 S 1060 E (1)	Cambium PMP450 Subscriber Module	0A:00:3E:44:04:77	https://10.9.2.84	Good	More...

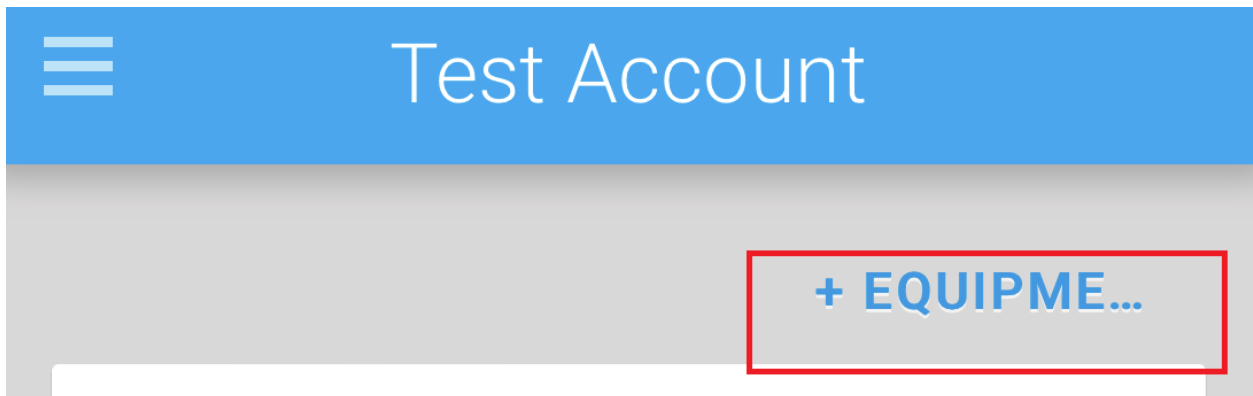
-Adding device to powercode on mobile

We are using PSA as an example here

-You will need to open up the job and find the blue bar at the bottom of the screen shown below, you will want to select the button labeled "Equipment"



-You will now be on the Equipment page, you will want to push the button at the top of the screen labeled "+EQUIPMENT"



- You will want to find the option labeled Device Category "CPE" should be the selected option.
- You will be changing the Device Type to the appropriate piece of equipment, in this case that would be "Cambium PMP450 Subscriber Module" Use the drop down arrow highlighted below to change

Device Category

CPE

Device Type

Cambium PMP450 Subscriber Mo...

-Next we will need to add the mac for the radio to powercode, scroll down until you find the mac address section shown below

-add the mac manually into the box that is highlighted below

Mac can be found on the side of the radio or the box it came in.might be in the job notes

MAC Address

MAC Address

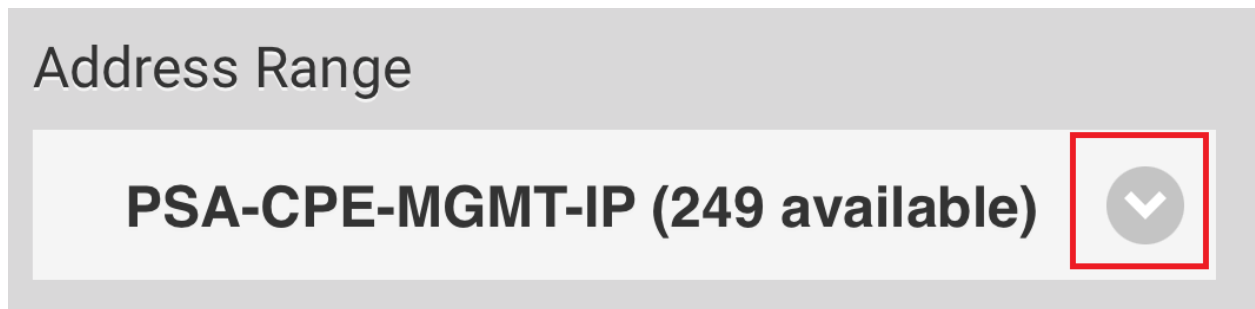
02:84:01:10:33:92

Configuration Template

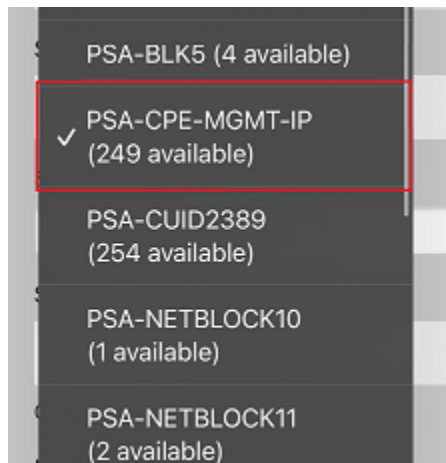
- Next we will set the Address Range Filter
- Scroll down to the boxes labeled “Address Range Filter” the Address Range box will be selected as the **tower site** we are connecting to. (I.e. PSA)
- Use the drop down arrow highlighted below to get more options.



- After you set the Address Range Filter (Tower) we will need to assign this device an IP using the box labeled “Address Range”. Use the drop down arrow to get more options
- We will want to assign the Radio a “**CPE-MGMT-IP**” for the appropriate tower as shown below



The below picture shows how it will appear in your list if you select the drop down arrow.



-After the above steps you will scroll down skipping other options and hit save.
After you have added the equipment it will appear on your screen under the equipment page as shown below.

The screenshot shows a mobile application interface for network management. At the top, there is a blue header bar with a white hamburger menu icon on the left and the text "Courtney Tipton" in white. Below the header, on a light gray background, is a blue link that says "+ EQUIPME...". A white card displays the following information: "Name Courtney Tipton - 98 e 970 n (1)", "IPv4 10.9.2.105", "MAC 0A:00:3E:98:80:A4", and "Status Good". To the right of "Status Good" is a blue button labeled "REPROBE". Below the "Notes" label are three blue buttons: "VIEW", "EDIT", and "DELETE".

Menu Courtney Tipton

[+ EQUIPME...](#)

Name Courtney Tipton - 98 e 970 n (1)

IPv4 10.9.2.105

MAC 0A:00:3E:98:80:A4

Status Good [REPROBE](#)

Notes

[VIEW](#) [EDIT](#) [DELETE](#)

-Alignment

-You will want to roughly point the dish at the tower before powering it on. After you power it on you will want to plug your headphones into the radio. (Audio is the easiest way to point this radio)

-the radio will make a few beeping tones, when it beeps it is scanning for the towers. After it latches it will make a constant buzzing tone, you will tilt the dish up and down and left to right until you find the highest pitch tone and then lock the radio down. You can check the RSSI on a laptop bypassed after install or you can call the NOC and have them check your stats while you point it in.

-After installation-Checking Stats

-first login to the radio with the below credentials.

** Bypassed you can use the default IP <http://169.254.1.1>**

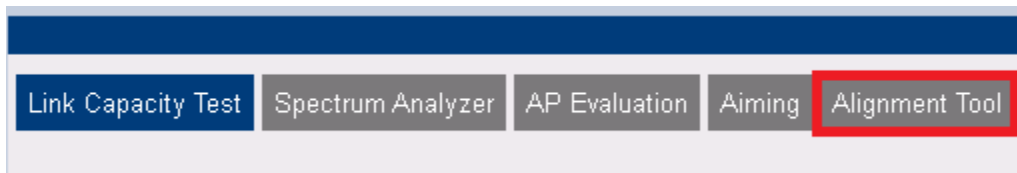
Username: admin, Password: E1xRM9IXG2okqL

-check the RSSI and SNR on the main page, in the box labeled **“Subscriber Module Stats”**

-RSSI should be -65 or better, SNR should be a minimum of 30 if not better

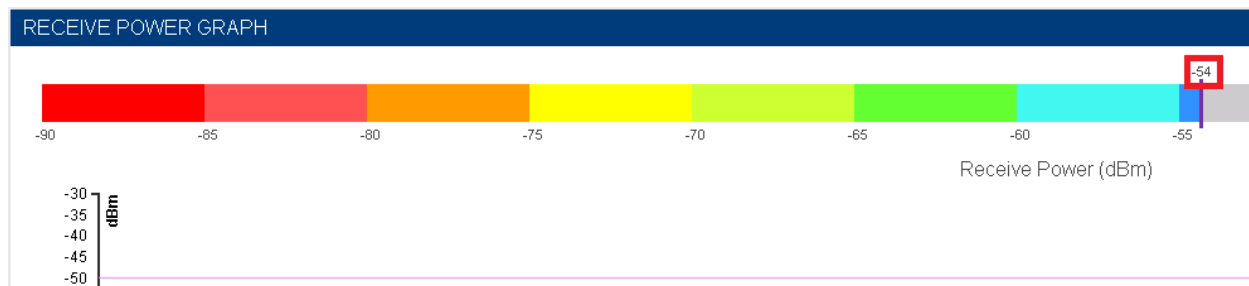
Subscriber Module Stats	
Session Status :	REGISTERED 8X/8X MIMO-B
Session Uptime :	31 d, 03:45:32
Registered AP :	0a-00-3e-60-c2-3d SQD-006
Color Code :	120 (Primary)
Sector ID :	0
Channel Frequency :	5845.0 MHz
Channel Bandwidth :	30.0 MHz
Cyclic Prefix :	1/16
Air Delay :	15750 ns, approximately 1.466 miles (7741
Receive Power :	-53.9 dBm Signal or RSSI
Signal Strength Ratio :	2.0dB V - H
Signal to Noise Ratio :	31 V / 30 H dB SNR
Beacons :	100 %
Transmit Power :	22 dBm
Total Antenna Gain :	32 dBi (23 dBi external + 9 dBi internal)

-If you want a closer look you can now check the alignment tool. You will want to click on **“Tools”** on the left of the screen and then look along the top bar for the tab labeled **“Alignment Tool”**

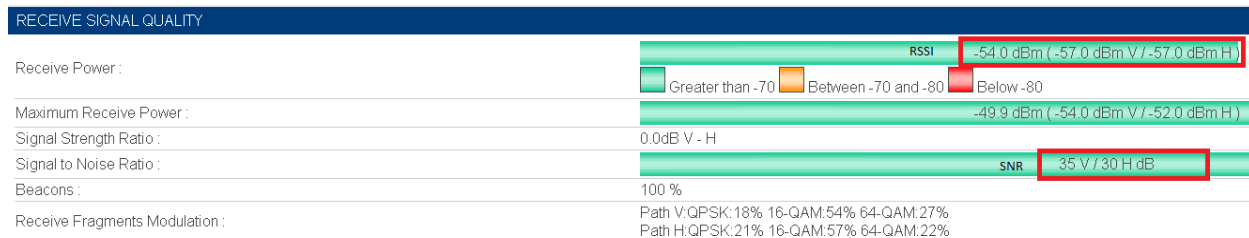


-You will now be on the alignment page, you will see a bar that moves as the radio is moved and it displays the RSSI

-The current RSSI is displayed in the red box below.

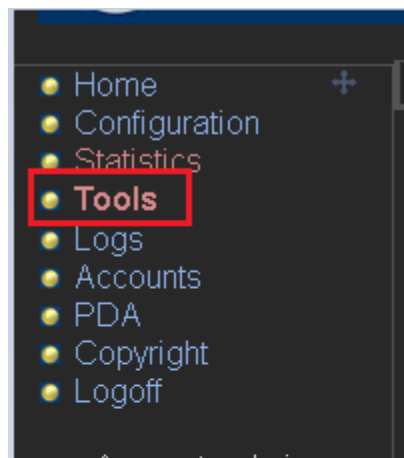


-You can also check the chart below on the same screen to get the data, this screen is a little delayed, I recommend you aim the radio with the audio tone.

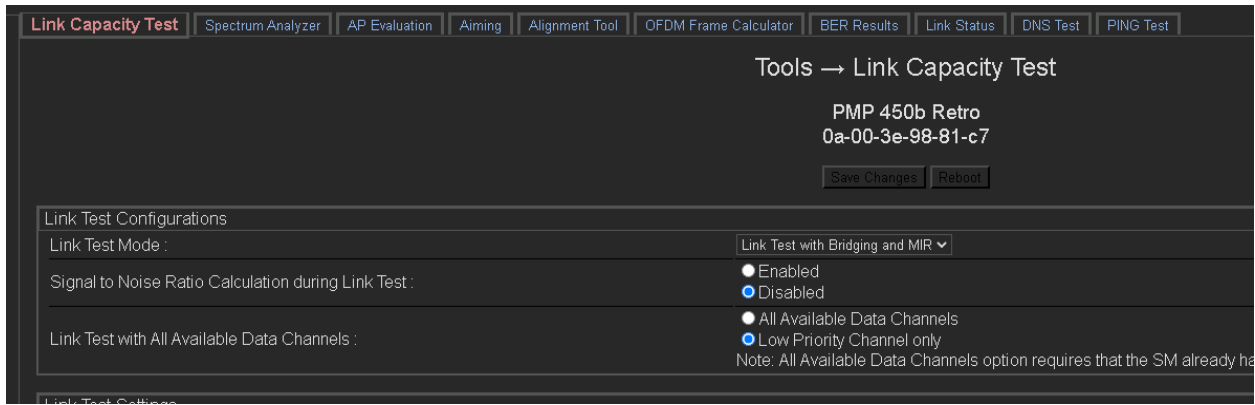


-Running a link test

-click the "Tools" button on the left side of the screen



-The page that will be displayed is the page you will use to run the link test, you will want to make sure the link test mode is set to “link test with bridging and MIR” run a 10 second test by hitting start test.



-test results will be displayed in the box labeled “Current Results Status”
If speeds are not above desired package you will want to try the another AP on the tower

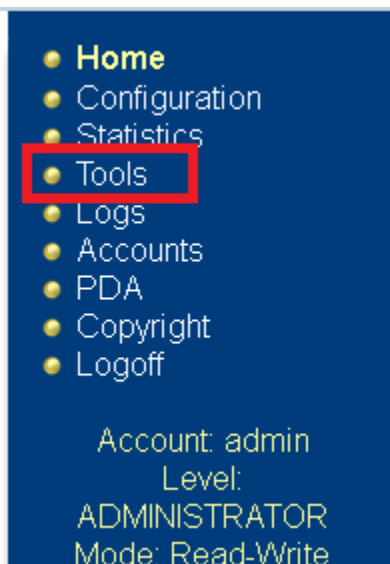
The screenshot shows the 'Link Test with Bridging and MIR' results table. The table has three columns: 'Data Channel Priority', 'Downlink', and 'Uplink'. The 'Downlink' and 'Uplink' columns are highlighted with a red box. Below the table, the words 'Download' and 'Upload' are written in red text.

Data Channel Priority	Downlink	Uplink
Low	75.51 Mbps	34.82 Mbps

Download Upload

-How to Rescan the APs

-To select another AP you will need to complete an AP evaluation, you will need to navigate to the the button labeled “Tools” on the left side of the screen



-Then select the button along the top of the screen labeled “AP Evaluation” 3rd from the left



-You will want to hit the button in the center of the screen labeled “Rescan APs”

****When you do this the radio will go down, bypassed ping the default IP until it comes back up****

AP List

AP Selection Method used: Optimize for Throughput
Current entry index: 4 Session Status: REGISTERED (via Primary Color Code 116)

Index: 4 Frequency: 5815.000 MHz Channel Bandwidth: 30.0 MHz Cyclic Prefix: 1/16
ESN: 0a-00-3e-60-5f-18 Region: United States
Beacon Receive Power: -57.6 (-68.0 V / -58.0 H) dBm Beacon Count: 7 FECEn: 1
Type: Multipoint Avail: 1 Age: 0 Scans Seen: 1 Lockout: 0 RegFail 0 Range: 7056 feet MaxRange: 6 miles TxBER: 1 EBcast: 1 AE
Session Count: 1 NoLUIDS: 0 OutOfRange: 0 AuthFail: 0 EncryptFail: 0 Rescan Req: 0 SMLimitReached: 0
NoVC's: 0 VCRsv430smFail: 0 VCActFail: 0 UnsupportedULMap: 0 Air Delay:14450

AP Gain: 21 dBm AP RcvT: -68 dBm Color Code: 116 BeaconVersion: 1 SectorUserCount: 0 SyncSrc: 1
NumULSlots: 56 NumDLSlots: 222 NumULContSlots: 4
WhiteSched: 0 ICC: 1 Authentication: Enabled (PSK)
SM PPPoE: Supported
AckBeforeMap: Enabled
Frame Period:5 ms

-You will then get a lot of data. You will want to find the Color Code for that tower it is pointed at with the best signal and SNR and make sure that is the one saved to the radio and all others have been deleted.

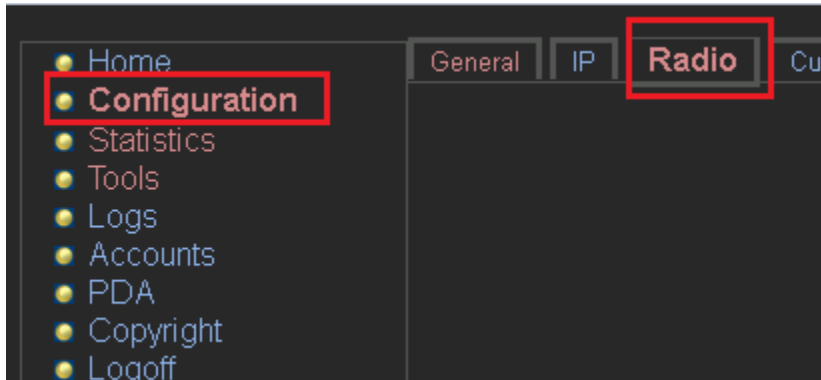
-The radio will need to be rebooted if the color code has been changed for it to take effect.

-AP List

AP LIST	
AP	CC
PSA025-	116
PSA029-	122
SQA011-	112
SQA016-	111
SQA017-	119
SQB010-	113
SQB011-	118
SQB012-	117
SQD001-	114
SQD004-	115
SQD005-	120
SLA010-	121

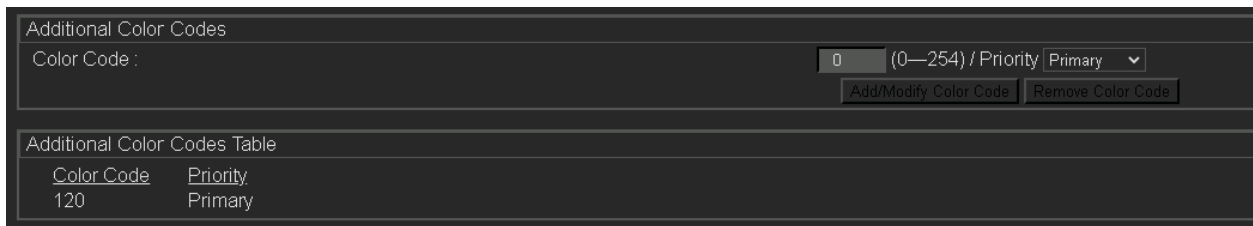
-How to delete color codes

-click the “**Configuration**” tab on the left and then select the button labeled “**Radio**” along the top.



-scroll down to the box labeled “**Additional Color Codes**”

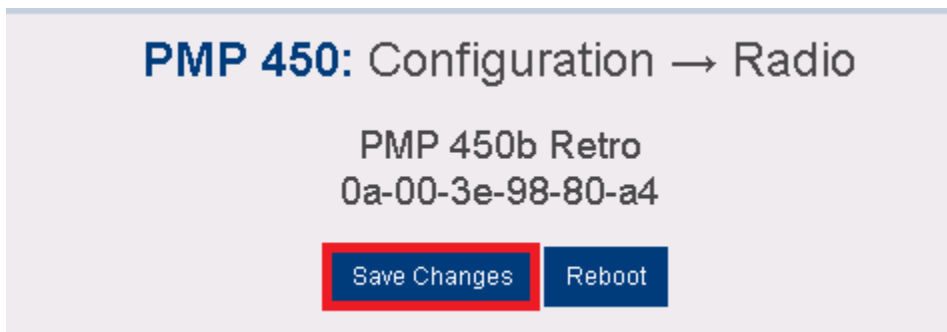
We only want to have one Color code set here as shown below



-To add or delete a color code you need to enter the color code into the box highlighted below and select the button labeled Add or Remove color code depending on which you would like to do

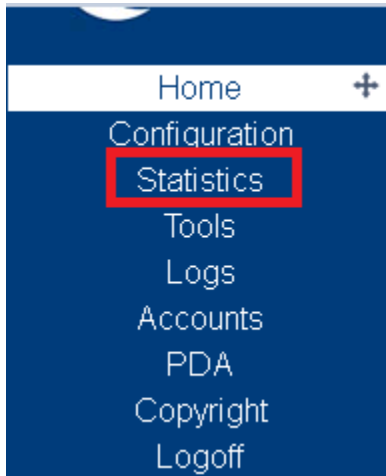


-After you have one Color code set as the primary you will want to scroll to the top of the screen and hit “**Save Changes**”

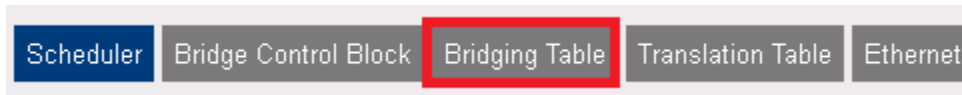


-Pulling the router mac

-Login to the radio and navigate to the bridge table. Click on the button labeled **“Statistics”**



-You will then want to click on the button labeled **“Bridging Table”** along the top of the screen.



-Look for the mac that is pulling on Eth0, that will be the device plugged into the POE. If you have the Canopy GUI enhancer extension, you can hover over the mac and it will tell you the manufacturer of the device.

BRIDGING TABLE			
Physical Address	Dest LUID	Interface Name	
0A003E9880A4	258	NI1 (Eth0 Mgmt)	
1A003E9880A4	259	NI2 (Priv RF Mgmt)	
D0768FF83C12	260	Eth0	